Red Hat CloudForms 4.6

Installing Red Hat CloudForms on Red Hat Virtualization

How to install and configure Red Hat CloudForms on a Red Hat Virtualization environment

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Abstract

This guide provides instructions on how to install and configure Red Hat CloudForms on a Red Hat Virtualization environment. If you have a suggestion for improving this guide or have found an error, please submit a Bugzilla report at http://bugzilla.redhat.com against Red Hat CloudForms Management Engine for the Documentation component. Please provide specific details, such as the section number, guide name, and CloudForms version so we can easily locate the content.

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CHAPTER 1. INSTALLING RED HAT CLOUDFORMS

Installing Red Hat CloudForms on Red Hat Virtualization consists of the following steps:

1. Downloading the appliance for your environment as a virtual machine image template.
2. Uploading the appliance image to the Red Hat Virtualization data storage domain.
3. Creating a virtual machine based on the appliance.

After you have completed all the procedures in this chapter, you will have a working environment which you can further configure and customize.

Requirements

Uploading the CloudForms appliance file to Red Hat Virtualization requires:

- 44 GB of storage space on both the export domain and the local partition where `/tmp` resides, as the **OVF** archive is locally expanded into that directory.
- 12 GB RAM.
- 4 vCPUs.

1.1. OBTAINING THE APPLIANCE

To obtain a copy of the appliance from the Customer Portal:

1. Log in to the Red Hat Customer Portal at access.redhat.com using your customer account details.
2. Click **Downloads** in the menu bar.
3. Click **A-Z** to sort the product downloads alphabetically.
4. Click **Red Hat CloudForms** to access the product download page.
5. From the list of installers and images, click the **Download Now** link for the latest version of the **CFME Red Hat Virtual Appliance (qcow)** .

After the image completes downloading, you are ready to upload the CloudForms appliance to your Red Hat Virtualization environment and create a virtual machine.

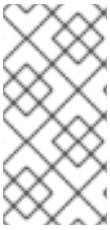
1.2. UPLOADING THE APPLIANCE TO RED HAT VIRTUALIZATION

Upload the **qcow2** appliance image to your Red Hat Virtualization data storage domain from the Red Hat Virtualization Administration Portal.

Prerequisites:

- You must configure the Image I/O Proxy when running `engine-setup`. See Configuring the Red Hat Virtualization Manager in the *Red Hat Virtualization Installation Guide* for more information.
- Internet Explorer 10, Firefox 35, or Chrome 13 or greater is required to perform this upload procedure. Previous browser versions do not support the required HTML5 APIs.

- You must import the required certificate authority into the web browser used to access the Administration Portal.



NOTE

To import the certificate authority, browse to **`https://<engine_address>/ovirt-engine/services/pki-resource?resource=ca-certificate&format=X509-PEM-CA`** and select all the trust settings. Refer to the instructions to install the certificate authority in Firefox, Internet Explorer, or Google Chrome.

To upload the appliance:

1. Log in to the Red Hat Virtualization Administration Portal.
2. Click **Storage** → **Disks**.
3. Select **Upload** → **Start**.
4. Click **Choose File**, and select the appliance image to upload.
5. Under **Disk Options**, enter an **Alias** for the image.
6. (Optional) Edit other fields in **Disk Options** if desired.
7. Click **OK**.

A progress bar in the **Status** column indicates the status of the upload. You can also pause, cancel, or resume uploads from the **Upload** menu.

The status shows **OK** when the image has completed uploading.

NOTE

See the Uploading Images to a Data Storage Domain in the *Red Hat Virtualization Administration Guide* for more information.

Increasing the Upload Timeout Value

1. If the upload times out and you see the message, **`Reason: timeout due to transfer inactivity`**, increase the timeout value:

```
# engine-config -s
TransferImageClientInactivityTimeoutInSeconds=6000
```

2. Restart the ovirt-engine service:

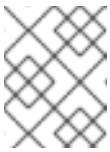
```
# systemctl restart ovirt-engine
```

1.3. CREATING A CLOUDFORMS VIRTUAL MACHINE

After uploading the appliance to the data domain, create a virtual machine containing the CloudForms image and a second disk for the database:

1. In **Compute** → **Virtual Machines**, click **New** to open the **New Virtual Machine** dialog.

2. From the **General** tab, specify a name for the virtual machine and any other details.
3. Click **Attach**.
4. Select the CloudForms appliance you uploaded from the list of images and click **OK**.
5. Click the VM to open its details screen, and click the **Disks** tab.
6. Click **Edit** to the disk, and check **Bootable** if it is not marked already.
7. Click **OK**.
8. Add a second disk for the database:
    a. Click the **General** tab and click the **Edit** button to edit the virtual machine.
    b. Click **+** and **Create** to create a disk for the database (VMDB).
    c. Specify a **Size** in GB for the disk that allows sufficient space for your database. Red Hat recommends allocating the virtual machine disk fully at the time of creation. Three main factors affect the size of your database over time:
        - Virtual Machine Count: the most important factor in the calculation of virtual machine database (VMDB) size over time.
        - Host Count: the number of hosts associated with the provider.
        - Storage Count: the number of individual storage elements as seen from the perspective of the provider or host. It is not the total number of virtual disks for all virtual machines.



NOTE

See Database Requirements in the *Deployment Planning Guide* for information on calculating disk size for your database.

    d. Set the **Allocation Policy** to `Preallocated` (thick provisioning) for best performance.
    e. Specify any other values as desired.
9. Click **OK** to create the disk and return to the **New Virtual Machine** window.
10. Add a network interface to the virtual machine by selecting a vNIC profile from the **nic1** list.
11. Click **OK** to save your changes to the virtual machine.
12. Start the CloudForms appliance by clicking the **Run** button.

Your Red Hat Virtualization environment now contains a running CloudForms appliance.

CHAPTER 2. CONFIGURING RED HAT CLOUDFORMS

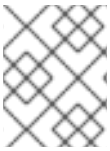
After installing CloudForms and running it for the first time, you must perform some basic configuration. To configure CloudForms, you must at a minimum:

1. Add a disk to the infrastructure hosting your appliance.
2. Configure the database.

Configure the CloudForms appliance using the internal appliance console.

2.1. ACCESSING THE APPLIANCE CONSOLE

1. Start the appliance and open a terminal console.
2. After starting the appliance, log in with a user name of **root** and the default password of **smartvm**. This displays the Bash prompt for the **root** user.
3. Enter the **appliance_console** command. The Red Hat CloudForms appliance summary screen displays.
4. Press **Enter** to manually configure settings.
5. Press the number for the item you want to change, and press **Enter**. The options for your selection are displayed.
6. Follow the prompts to make the changes.
7. Press **Enter** to accept a setting where applicable.



NOTE

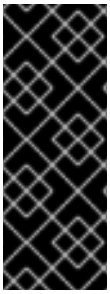
The CloudForms appliance console automatically logs out after five minutes of inactivity.

2.2. CONFIGURING A DATABASE

CloudForms uses a database to store information about the environment. Before using CloudForms, configure the database options for it; CloudForms provides the following two options for database configuration:

- Install an internal PostgreSQL database to the appliance
- Configure the appliance to use an external PostgreSQL database

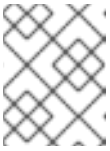
2.2.1. Configuring an Internal Database



IMPORTANT

Before installing an internal database, add a disk to the infrastructure hosting your appliance. See the documentation specific to your infrastructure for instructions for adding a disk. As a storage disk usually cannot be added while a virtual machine is running, Red Hat recommends adding the disk before starting the appliance. Red Hat CloudForms only supports installing of an internal VMDB on blank disks; installation will fail if the disks are not blank.

1. Start the appliance and open a terminal console.
2. After starting the appliance, log in with a user name of **root** and the default password of **smartvm**. This displays the Bash prompt for the **root** user.
3. Enter the **appliance_console** command. The Red Hat CloudForms appliance summary screen displays.
4. Press **Enter** to manually configure settings.
5. Select **5) Configure Database** from the menu.
6. You are prompted to create or fetch an encryption key.
   - If this is the first Red Hat CloudForms appliance, choose **1) Create key** .
   - If this is not the first Red Hat CloudForms appliance, choose **2) Fetch key from remote machine** to fetch the key from the first appliance. For worker and multi-region setups, use this option to copy key from another appliance.



NOTE

All CloudForms appliances in a multi-region deployment must use the same key.

7. Choose **1) Create Internal Database** for the database location.
8. Choose a disk for the database. This can be either a disk you attached previously, or a partition on the current disk.

IMPORTANT

Red Hat recommends using a separate disk for the database.

If there is an unpartitioned disk attached to the virtual machine, the dialog will show options similar to the following:

```
1) /dev/vdb: 20480
2) Don't partition the disk
```

- Enter **1** to choose **/dev/vdb** for the database location. This option creates a logical volume using this device and mounts the volume to the appliance in a location appropriate for storing the database. The default location is **/var/opt/rh/rh-postgresql95/lib/pgsql**, which can be found in the environment variable **$APPLIANCE_PG_MOUNT_POINT**.

- Enter **2** to continue without partitioning the disk. A second prompt will confirm this choice. Selecting this option results in using the root filesystem for the data directory (not advised in most cases).

9. Enter **Y** or **N** for **Should this appliance run as a standalone database server?**
   - Select **Y** to configure the appliance as a database-only appliance. As a result, the appliance is configured as a basic PostgreSQL server, without a user interface.
   - Select **N** to configure the appliance with the full administrative user interface.
10. When prompted, enter a unique number to create a new region.

IMPORTANT

Creating a new region destroys any existing data on the chosen database.

11. Create and confirm a password for the database.

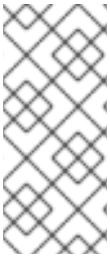
Red Hat CloudForms then configures the internal database. This takes a few minutes. After the database is created and initialized, you can log in to CloudForms.

2.2.2. Configuring an External Database

Based on your setup, you will choose to configure the appliance to use an external PostgreSQL database. For example, we can only have one database in a single region. However, a region can be segmented into multiple zones, such as database zone, user interface zone, and reporting zone, where each zone provides a specific function. The appliances in these zones must be configured to use an external database.

The `postgresql.conf` file used with Red Hat CloudForms databases requires specific settings for correct operation. For example, it must correctly reclaim table space, control session timeouts, and format the PostgreSQL server log for improved system support. Due to these requirements, Red Hat recommends that external Red Hat CloudForms databases use a `postgresql.conf` file based on the standard file used by the Red Hat CloudForms appliance.

Ensure you configure the settings in the `postgresql.conf` to suit your system. For example, customize the `shared_buffers` setting according to the amount of real storage available in the external system hosting the PostgreSQL instance. In addition, depending on the aggregate number of appliances expected to connect to the PostgreSQL instance, it may be necessary to alter the `max_connections` setting.



NOTE

- Red Hat CloudForms 4.x requires PostgreSQL version 9.4.
- Because the `postgresql.conf` file controls the operation of all databases managed by a single instance of PostgreSQL, do not mix Red Hat CloudForms databases with other types of databases in a single PostgreSQL instance.

1. Start the appliance and open a terminal console.
2. After starting the appliance, log in with a user name of `root` and the default password of `smartvm`. This displays the Bash prompt for the `root` user.

3. Enter the **`appliance_console`** command. The Red Hat CloudForms appliance summary screen displays.

4. Press **Enter** to manually configure settings.

5. Select **5) Configure Database** from the menu.

6. You are prompted to create or fetch a security key.

   - If this is the first Red Hat CloudForms appliance, choose **1) Create key** .
   - If this is not the first Red Hat CloudForms appliance, choose **2) Fetch key from remote machine** to fetch the key from the first appliance.

NOTE

All CloudForms appliances in a multi-region deployment must use the same key.

7. Choose **2) Create Region in External Database** for the database location.

8. Enter the database hostname or IP address when prompted.

9. Enter the database name or leave blank for the default (**`vmdb_production`**).

10. Enter the database username or leave blank for the default (**`root`**).

11. Enter the chosen database user's password.

12. Confirm the configuration if prompted.

Red Hat CloudForms will then configure the external database.

2.3. CONFIGURING A WORKER APPLIANCE

You can use multiple appliances to facilitate horizontal scaling, as well as for dividing up work by roles. Accordingly, configure an appliance to handle work for one or many roles, with workers within the appliance carrying out the duties for which they are configured. You can configure a worker appliance through the terminal. The following steps demonstrate how to join a worker appliance to an appliance that already has a region configured with a database.

1. Start the appliance and open a terminal console.

2. After starting the appliance, log in with a user name of **`root`** and the default password of **`smartvm`**. This displays the Bash prompt for the **`root`** user.

3. Enter the **`appliance_console`** command. The Red Hat CloudForms appliance summary screen displays.

4. Press **Enter** to manually configure settings.

5. Select **5) Configure Database** from the menu.

6. You are prompted to create or fetch a security key. Since this is not the first Red Hat CloudForms appliance, choose **2) Fetch key from remote machine** . For worker and multi-region setups, use this option to copy the security key from another appliance.

NOTE

All CloudForms appliances in a multi-region deployment must use the same key.

7. Choose **3) Join Region in External Database** for the database location.
8. Enter the database hostname or IP address when prompted.
9. Enter the port number or leave blank for the default (**5432**).
10. Enter the database name or leave blank for the default (**`vmdb_production`**).
11. Enter the database username or leave blank for the default (**`root`**).
12. Enter the chosen database user's password.
13. Confirm the configuration if prompted.

CHAPTER 3. LOGGING IN AFTER INSTALLING RED HAT CLOUDFORMS

Once Red Hat CloudForms is installed, you can log in and perform administration tasks.

Log in to Red Hat CloudForms for the first time after installing by:

1. Navigate to the URL for the login screen. (https://xx.xx.xx.xx on the virtual machine instance)
2. Enter the default credentials (Username: **admin** | Password: **smartvm**) for the initial login.
3. Click **Login**.

3.1. CHANGING THE DEFAULT LOGIN PASSWORD

Change your password to ensure more private and secure access to Red Hat CloudForms.

1. Navigate to the URL for the login screen. (https://xx.xx.xx.xx on the virtual machine instance)
2. Click **Update Password** beneath the **Username** and **Password** text fields.
3. Enter your current **Username** and **Password** in the text fields.
4. Input a new password in the **New Password** field.
5. Repeat your new password in the **Verify Password** field.
6. Click **Login**.

APPENDIX A. APPENDIX

A.1. APPLIANCE CONSOLE COMMAND-LINE INTERFACE (CLI)

Currently, the **appliance_console_cli** feature is a subset of the full functionality of the **appliance_console** itself, and covers functions most likely to be scripted using the command-line interface (CLI).

1. After starting the Red Hat CloudForms appliance, log in with a user name of **root** and the default password of **smartvm**. This displays the Bash prompt for the root user.

2. Enter the **appliance_console_cli** or **appliance_console_cli --help** command to see a list of options available with the command, or simply enter **appliance_console_cli --option <argument>** directly to use a specific option.

Table A.1. Database Configuration Options

Option	Description
--region (-r)	region number (create a new region in the database - requires database credentials passed)
--internal (-i)	internal database (create a database on the current appliance)
--dbdisk	database disk device path (for configuring an internal database)
--hostname (-h)	database hostname
--port	database port (defaults to **5432**)
--username (-U)	database username (defaults to **root**)
--password (-p)	database password
--dbname (-d)	database name (defaults to **vmdb_production**)

Table A.2. v2_key Options

Option	Description
--key (-k)	create a new v2_key
--fetch-key (-K)	fetch the v2_key from the given host
--force-key (-f)	create or fetch the key even if one exists

Option	Description
--sshlogin	ssh username for fetching the v2_key (defaults to `root`)
--sshpassword	ssh password for fetching the v2_key

Table A.3. IPA Server Options

Option	Description
--host (-H)	set the appliance hostname to the given name
--ipaserver (-e)	IPA server FQDN
--ipaprincipal (-n)	IPA server principal (default: `admin`)
--ipapassword (-w)	IPA server password
--ipadomain (-o)	IPA server domain (optional). Will be based on the appliance domain name if not specified.
--iparealm (-l)	IPA server realm (optional). Will be based on the domain name of the ipaserver if not specified.
--uninstall-ipa (-u)	uninstall IPA client

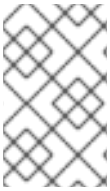
NOTE

- In order to configure authentication through an IPA server, in addition to using **Configure External Authentication (httpd)** in the `appliance_console`, external authentication can be optionally configured via the `appliance_console_cli` (command-line interface).
- Specifying **--host** will update the hostname of the appliance. If this step was already performed via the `appliance_console` and the necessary updates made to `/etc/hosts` if DNS is not properly configured, the **--host** option can be omitted.

Table A.4. Certificate Options

Option	Description
--ca (-c)	CA name used for certmonger (default: `ipa`)
--postgres-client-cert (-g)	install certs for postgres client
--postgres-server-cert	install certs for postgres server

Option	Description
--http-cert	install certs for http server (to create certs/httpd* values for a unique key)
--extauth-opts (-x)	external authentication options



NOTE

The certificate options augment the functionality of the `certmonger` tool and enable creating a certificate signing request (CSR), and specifying `certmonger` the directories to store the keys.

Table A.5. Other Options

Option	Description
--logdisk (-l)	log disk path
--tmpdisk	initialize the given device for temp storage (volume mounted at `/var/www/miq_tmp`)
--verbose (-v)	print more debugging info

Example Usage

```
$ ssh root@appliance.test.company.com
```

To create a new database locally on the server using `/dev/sdb`:

```
# appliance_console_cli --internal --dbdisk /dev/sdb --region 0 --password
smartvm
```

To copy the v2_key from a host *some.example.com* to local machine:

```
# appliance_console_cli --fetch-key some.example.com --sshlogin root --
sshpassword smartvm
```

You could combine the two to join a region where *db.example.com* is the appliance hosting the database:

```
# appliance_console_cli --fetch-key db.example.com --sshlogin root --
sshpassword smartvm --hostname db.example.com --password
mydatabasepassword
```

To configure external authentication:

-

```
# appliance_console_cli --host appliance.test.company.com
                        --ipaserver ipaserver.test.company.com
                        --ipadomain test.company.com
                        --iparealm TEST.COMPANY.COM
                        --ipaprincipal admin
                        --ipapassword smartvm1
```

To uninstall external authentication:

```
# appliance_console_cli  --uninstall-ipa
```